

**FROM BARCELONA TO VANCOUVER:
THE USE OF THE GREEN AREAS ALONG SPACE/TIME**

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Resumen:

El enfoque de esta reflexión es sobre el paisaje: en su relación con los jardines, la arquitectura y el medio ambiente, y el uso de las áreas a lo largo del espacio y el tiempo. A lo largo de la historia, las áreas verdes se conciben como resultado de una necesidad para las ciudades, un espacio añadido a las áreas construidas, volviéndose un impedimento para los Servicios del Eco Sistema Ecológico. Recientemente nos empezamos a dar cuenta de los nuevos factores que dan una nueva perspectiva a los "pulmones de la ciudad". El ritmo de la ciudad en sí ha cambiado, el tiempo de uso de los espacios verdes debe cambiar junto con él: la hipótesis es que necesitamos extender el uso de estas áreas durante las 24 horas también.

Keywords: Barcelona, Green Areas, Landscape, Digital Turn, biothings, natural light, artificial light, nocturnal landscapes.

Abstract:

The focus of this reflection is about the landscape: in its relation with gardens, architecture and environment, and the use of the areas along space and time. Along history the green areas are conceived as a result of a necessity for the cities, a space acquired for the build up areas, becoming an impediment for the Eco System Services." Recently, we become aware of the new factors that give a new perspective to the "lungs of the city". The rhythm of the city itself has changed, the time of use of green spaces needs to change along with it: the hypothesis is that we need to extend the use of the areas during a 24 hour day as well.

1. INTRODUCTION: UNDERSTANDING THE MOMENT TO CREATE THE FUTURE

The concept of green spaces for urban environment has changed along history

Recreational areas for the nobility and for rich people at the beginning, they changed to be areas for citizens becoming part of the planning process of the city itself. The location and the popularity of each area are differentiated depending also from the use for what they are destined for. Recently, the most dominant feature of walking and enjoying the green areas within the suburban space, we become aware of the new factors that give a new perspective to the «lungs of the city». The raise of internet, wifi, apps¹, electric cars² versus recreational, ecological necessities, are accompanying the modern smart city into a new recognition of its own heritage, including the green areas. We are now conscious that the present planning must be done for a future possible: and this use must be extended in space and time as well.

Cities are undergoing a profound transformation: the convergence of digital information (bits) and physical environment (bricks)³. So, because the rhythm of the city itself has changed, the time of use of green spaces needs to change along with it: the hypothesis is that we need to extend the use of the areas during a 24 hour day as well. The reason is that the necessity of green spaces is also a necessity adapted to a new reality in relation to certain accomplishments: what the energy of the city is, and about what it is related with. It's in this sphere that we can recognize the heritage of the city itself, its geographical importance related to the use made of the space during the various hours of the day.

A possible starting point is, in fact, that we face an organization of the city continuing adding green to the urbanized areas, and in which the buildings are conceived as an impediment for the Eco System Services.

2. DEFINING A CONCEPT OF LANDSCAPE

Our objective is to focus on landscape in its relation with gardens, architecture and environment: to identify alternatives ways to use the green areas along space/time. We want for explaining this, to trace a red line that join the various points.

The environmental aspect talks about the research of Augustin Berque, related with the country, the territory. So, giving an order to define a starting point, we will say that everything starts with René-Louis de Girardin, Marquis of Vauvray, Jean-Jacques Rousseau's last pupil. In his book *De la composition des paysages* (1777) he actually

¹ <https://www.transportxtra.com/publications/parking-review/news/55878/delivery-to-vehicle-apto-be-trialled-in-barcelona-car-parks>. Last Access 15/11/2018.

² The MIT Senseable City Lab developed a research related with this point, and one interesting question is about the necessity to adapt the city to the new trends of the modern life: it's probably needed to adapt the street lights to the new electric cars.
<https://www.youtube.com/watch?v=4CZc3erc14&feature=youtu.be> Last Access 14/11/2018

³ In April 22 2016 the MIT Senseable City Lab presented the 2016 Forum on Future Cities — Bits and Bricks. They convened major stakeholders in the development of cities: leaders of industry research metropolitan governance and citizens at large. Between the various participants were Joan Clos, Executive Director of UN-Habitat, mayor of the city of Barcelona between 1994 and 2006.
<http://senseable.mit.edu/bitsbricks/> Last Access 14/11/2018

said: «The composition of landscapes, can open the way to the renewal of the moral principles of the nation». He wrote in the last chapter:

«...If you want to achieve true happiness, you must always seek the simplest means and the arrangements closest to those of nature, because only those are true and will have a long-lasting effect.” He affirmed also that “along the big path and in the painting of the mediocre painters you can see just country, meanwhile the landscape is the joining of taste and sentiment».

The country, the territory, that can be around us like in the painting of the less talented painters are different from the landscape: this last one it's always the creation of taste. And it's about exploring this thought that in the last 25 years in France they are employing effort and investigations.

To explain better this concept, let's start with this word: Country. We identify in this concept a territory with defined boundaries. Another signification send us to a less geological, physical meaning: a concept that creates a spacial set that, following the cataloging of Yves Lacoste,⁴ we will call of the fifth order. He differentiates 8 orders, starting from the bigger one (the continent) till the smaller one, measurable in metres: the rocks, the isolated trees, the houses. More poetically but close the concept we are going to explore, Duchamp defined the category of the «regarder» (the observer): the spectator that seeing the painting create the emotion of what is seeing. Not all the civilisations had the concept of «Landscape», like the old Greece, or there were even been anti-landscape, like the Christians before Saint Francis of Assisi. To be «landscaping» a society had to have something like literature, iconography or just a word used to describe this situation. And Berque said that the Chinese civilisation of 2000 B.C. had the landscape sensibility because was disposing of words like rocks and water. After centuries, in Europe, with the invention of the perspective and with the movement of the culture we arrive to have landscape sensibility. In this way Riegl creates the concept of *Kunstwollen* (Panofsky 1981) that means «artistic will». So, it's in this interaction between observer and object of the observation that we define what we need to create the landscape.⁵

3. OVER THE DUALITY GREEN - SPACE

In our research we also remarked that the contemplation of the night landscape is a concept that finds its origins with the very birth of mankind. The concept of «night» has always been associated to something imaginative, the moment where the perception of the visible decreases and the reverberation of the other senses increases: in other words, things look different after dark.⁶ To explore better this concept the comparison will be given between two cities, Barcelona and Vancouver, that have developed their own way to use the green in the city: but where we also find a duality between green and city. This because, as we said, along history the green areas are

⁴ De la géopolitique aux paysages, 2003.

⁵ «When you design landscapes, remember that it's a journey. Nothing is fixed. Everything is going to evolve over time» (Kathryn Gustafson).

⁶ The perception of the night is so different to that which has been recently explored in there different aspects by a proper exhibition called «After Dark», at the Museum The Exploratorium, in San Francisco. <https://www.exploratorium.edu/visit/calendar/after-dark> Last Access 17/11/2018.

conceived as a result of a necessity for the cities, a space acquired for the build up areas. In this sense, Gianni Celestini declares:

«Il parco pur nella sua evoluzione resta comunque un'idea ed una struttura vincolata alla città consolidata. Le nuove forme dello sviluppo urbano contemporaneo richiedono una nuova formulazione dello spazio libero»
(Celestini 2002)

More recently, in their article *Can spatial form support Urban Eco System Services*, Meta Bergahuser Pont and Lars Marcus declared that:

«This type of research concerns the understanding of the resilience of urban systems in which urban systems are seen as integrated social-ecological systems, bridging the ancient dichotomy between human and ecological systems. Research shows that green spaces and its fragmentation are crucial for biodiversity and other ecosystem services» (Marcus et al. 2013).

There are cases where the landscape architect is the one that takes control of the whole project. Others cases, where the benefit coming from the use of the green areas increase till the point that generate organizations developed to take care of most the city itself.⁷

4. WORKING PLAN

Following a planning and development scheme, I clearly define materials and methods as well. I am focused on searching for materials that starts from the historic sources till the actuality, to compare the works that has been done between the parks of Barcelona, Paris, and Vancouver.

For this I am researching about:

- Material for parks (how they have been designed, for what they were/are used).
- The actuality of the city in relation with its own heritage and the necessity of each space.
- How the new social structure is evolving and how it will be integrated into the green space.
- A cross-disciplinary exploration of current work on visual design.
- Focus on the movement of people inside the city: study of flows.
- What creates the recognisability of a space: general and particular concepts.
- The ways in which the use of the space can affect our lives.
- The use of the areas extends in space/time: the space matrix method.

5. WORKING PLAN

Following the research, we realize that the necessity of green spaces is also a necessity adapted to a new reality in relation to certain accomplishments: what the energy of the city is, and about what it is related with. It's in this sphere that we can

⁷ <https://vancouver.ca/your-government/vancouver-board-of-parks-and-recreation.aspx>
Last Access 18/11/2018

recognize the heritage of the city itself, its geographical importance related to the use made of the space during the various hours of the day. Today nocturnal urban model explode the traditional model of concentric cities. They are reconstituted around axes of mobility through this multiplicity of networks that have to function 24 hours a day: and for who it seems that the night doesn't exist.

The very important element that we identify with the same concept of night and that mediate the passage between day and night is the artificial light, with its basic tool: the lamp.

The power of the lamps,⁸ the rated luminous flux,⁹ the luminous efficiency,¹⁰ the average life of a lamp, its ability to be colored and finally the cost, represent the characteristics that come into play when choosing a particular light source: all related to the perception of colors, the return of a particular effect and the desired effect of landscaping that, accentuating the passages and emphasizing otherwise unobtainable contrasts, allow us to have in hand the tools suitable for a project of night fruiting of a natural place.

Related with it, we will quote Mark Major that says:

«The movement of light is a linear process where time and space meet. Any moment reveals frozen movement in time. [...] Through the passage of light we track the change of the day into night as well as form and surface moving into light».

So, as we see, lighting is a Spatio - Temporal design field.

It's important to identify which are the elements with who we are working with, the tools, the plants and the final result that we want to obtain. So we have to take in considerations many important factors, and between them some specific element must be mentioned like the air, the water, the geographical area where the work needs to be developed. A very important factor that deserves to be underlined is that during the night, with the increase of the other senses and the push down of the vision, the help on the walk can be given by an acoustic support: an example can be showed by the walk on the gravel.

The landscape, so defined, can be natural including forestal, pluvial and so on, or artificial: cities, industries, can be part of the landscape talk. All of this enters in the widest view of the territory, as a space that unites all the previous definitions, and that can be also marked and recognized during the night by the definition of its own lights. In this way we can identify the infrastructural nature of the «nightscape», and the night can reveal the large-scale of the networked territory.

⁸ Luminance quantifies the visual impression perceived by the eye from a bright or illuminated surface. It is an essential photometric measure of the entire lighting project because it allows to measure and compare different visual impressions. It is absolutely dependent on the materials, colors, and texture of the surface of the object being viewed, unlike the surface illumination of a surface, which is absolutely independent of these data. Therefore, in the analysis and creation of a night landscape, the brightness of the bright spots and illuminated surfaces will be taken into account.

⁹ The power consumed by a lamp; is expressed in watts (symbol: W).

¹⁰ The amount of energy irradiated by the source per second; it is expressed in Lumen (symbol lm).

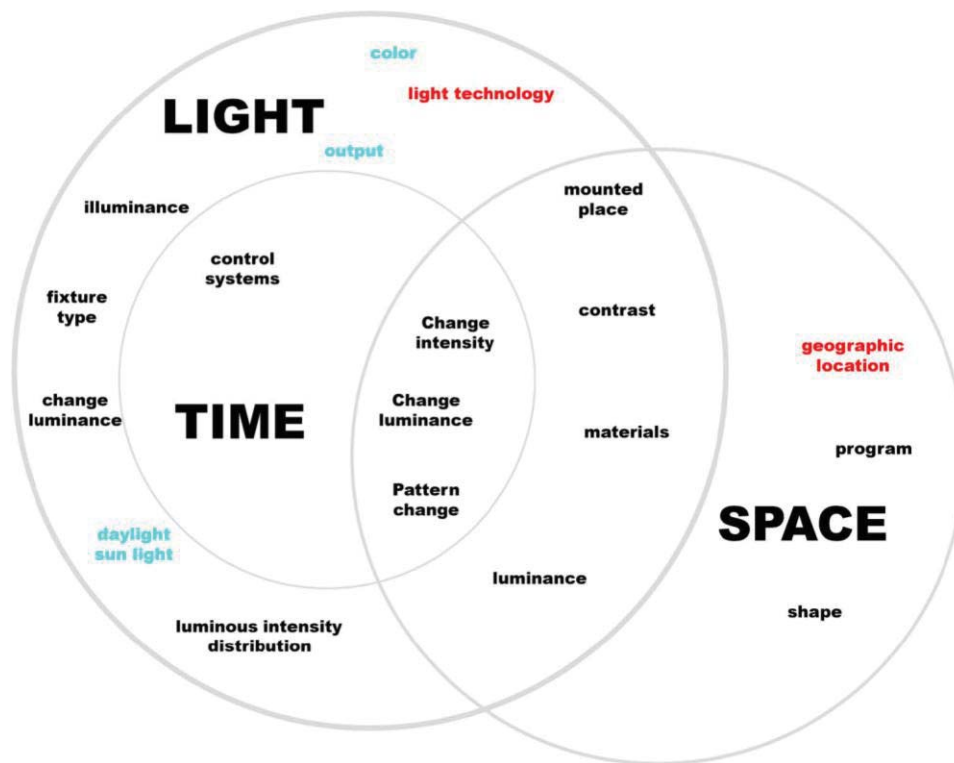


Figure 1. Light+Time+Space illustrated diagram.

(Source: Original image elaborated from "A Graphical Investigation of Light, Space, and Time in Lighting Design" by Antonia Peon Veiga, & Nathalie Rozot).



Figure 2. Night Aerial Shot of Barcelona by Vincent Laforet as example of the infrastructural nature of the nightscape. Night as revealing of the large-scale, of the networked territory.

So we remark that the idea that we formulate by looking at these spaces changes with the movement of the sun: with the coming of the evening the definitions change, not least the perceptions. We have at this point clarify also that, into this field, it doesn't exist a real normative to observe. As support to this affirmation I will quote Franco Zagari that, in his intervention in Barcelona COAC the past 31st of January 2018, in occasion of the conference «Paesaggio: a Che punto e' la Notte?» expressed once again this necessity saying that:

«[...] many signals let us thinking that landscaping is animated by a new mentality of reaction, with tools and methods more adequate to affirm new developing models: able to give back continuity between history, tradition and projection of future. So, it's important to act now, to put quality in the Landscape, seeing as a necessary tool a necessary politic priority».

And this politic priority has been manifested continuously in Barcelona: with the use of control system, the apps and the various technology always used, it has been till now at the cutting edge of the internet of things. This vision of the future defined by the use of apps during 24h is something that has been also developed by Vancouver: that want to reach the title of greenest city of the world in the 2020. To reach this aim, a strong programme developed by the Vancouver Park Board¹¹ relate the agency with the project that has been developed in collaboration with the Urbanarium Society and the UBC S.A.L.A.

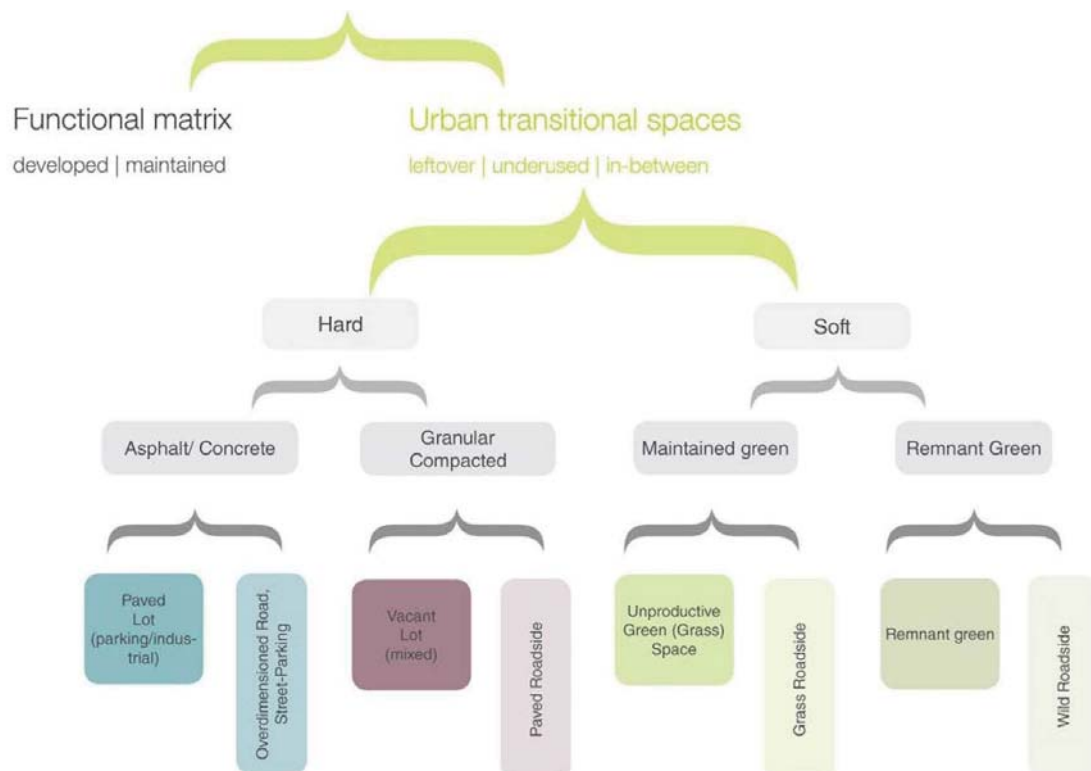


Figure 3. Functional Matrix + Urban Transitional spaces illustrated diagram: space typologies and test design strategies that can be applied on a variety of urban transitional spaces. (Source: "Groundbreaking: Alternative Ways of Greening the Urban Matrix" by "Sara Rickenbacher").

¹¹ The Vancouver Park Board, is an elected board that has possession, jurisdiction and control over public parks in Vancouver, and it's the only elected body of its kind in Canada. The board provides, preserve and advocate for the benefit of people, communities and the environment.

The world is moving towards a clean energy future. Architecture offers the opportunity to explore how a sustainable city could be created through understanding how a city works by its design. So, the actuality must show alternative ways of greening the Urban Matrix expanding its use period as well.

6. THE ACTUAL POINT

The use of the areas inside and around the city it must be promoted along the entire cycle of the day, closer to the necessity of the contemporary world. Its general possible use must be related with the simple question: in the future, do we think we will still use this space? And, if the answer is yes, what can we do to make that happen sooner? How? Whatever it will be that must be done, it probably will need to be related with the work of the phone and the apps.¹² About these last one we recognize them as important tools that we use ordinarily in our normal daily life. With a research developed in Boston¹³ they demonstrate that the 90% of adults use cells phones: going towards this idea, in Vancouver it has been developed one app that helps the citizens to interact with the municipality. Between the programs and strategies to reach the goal of greenest city of the world, they want to have green areas reachable by citizens in just 5 minutes walk from their home. To do this the municipality is acquiring areas to create green, or it's just closing street to realize parks. The increasing of the green canopy supports the Eco System Services on which the city depends.

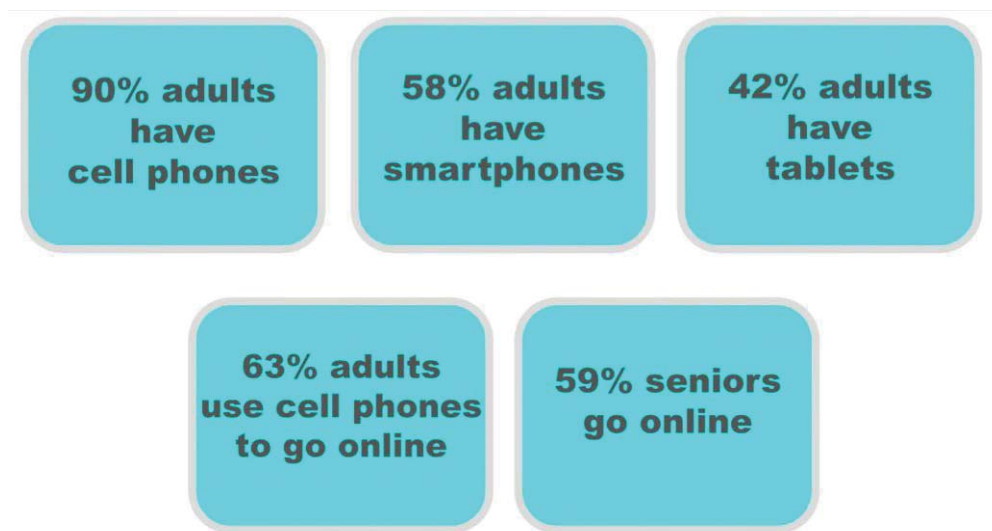


Figure 4. Percent of the use of the phone technology between adults have increased over the years. The use of the app to search info or contact service regarding the city is the natural step.

(Source: Original Image elaborated from <https://www.boston.gov/departments/innovation-and-technology/apps>).

Related with this concept, we shall quote religiously MVRDV that says:

«In a time of the “instant city” and fast - paced communication in the contemporary world, the buffer space for contemplation and return to nature becomes an essential feature for urban environment» - 24 hours a day as well we will add.

¹² https://www.austintexas.gov/sites/default/files/files/Austin_Smart_City_proposal_2-4-16.pdf

¹³ As final result they developed the BOS3



Figure 5. Example of highlighted night life. (Source: <http://www.futureoflight.philips.com/home/environment/ambitious-sustainability-goals-part-2>).

7. INITIAL HYPOTHESIS

To talk about green areas in modern times, let us enter into a field that moves between achievement and wishes. Nowadays, the new vision of reality is strongly defined by the idea that «the new» evolves billion times faster than just 40 years ago (Carpo 2017): and this new vision involves also the landscape field.¹⁴ But meanwhile this does move toward a direction where Artificial Intelligence (aka A.I.) takes a controlling position on the construction field (glorified by digital shapes and forms), it remains yet not reliable in the area of the proper conception of the project: in which the human instinct remains, still and luckily, indispensable.

Starting from this, the fundamental idea that the contemporary bit is going to take over everything it seems both: an imminent and, at the same time, an indispensable tool. Although we easily recognize that the human brain is not capable to compete with the A.I.'s calculations, it's this one that is able to give a billion of different solutions in the blink of an eye: and this last consideration shakes the market. We arrived to the point that the constructive algorithms of the new architecture are taking over so fast that their clear reference became now the work made by Mother Nature. Instinctively we look to what has been created. And the compositional randomness of the algorithm formed in nature, that shapes the forms of actual object, it's a synonym once again, which refers to the most profoundly ancient thing of the universe: the concept of a generating matrix.¹⁵ It is this one that, combined with an instinctive compositional randomness, it manages to give a sequence of algorithms that keeps under control, not exactly strict we have to add, what has been done in the architectural technological field. Recently this one has been linked, more than other things, to the use of technology. Hence the deduction that the natural model, to which the sequence refers, has not yet found the right development in the main field of reference: the external landscape.

¹⁴ <https://pld-m.com/de/forschungspavillon-20142015-in-stuttgartd/>. Last view: 22/07/2018

¹⁵ About this concept earlier Mitchell, between the 1987 and the 1991, wrote three influential books talking about computational and landscape. The Poetics of Gardens, instead, it has been written in collaboration with Charles Moore, and we expect to show that should not be seen as a detour from Mitchell's path on computational design, but rather as a very key piece for understanding the relationship between meaning and logic in his coherent body.

So, new quantum technologies, geometries and weighted adaptation sequences now have a clearer reference into nature. And nature itself, which rewards the perfection of the very development of fractal models, now has a clear emulator in the generator of extreme spaces built into the «Biothing» model.¹⁶ The attempt is to create a sequence that starts from the machine and immediately becomes revisited in external self-supporting shapes. But the concept of nature is definitely a hardly predictable concept in terms of the final result of the image to be obtained: the ideal product should have the capacity to *constantly adapt itself* to the growth that spreads around the implementation. An instinctive model to follow, for example, could be the life cycle of a tree: this model is determined by concentric circles that declare, once the trunk is cut, its age. Adopting this concept, taking its inspiration, it might mean to aggregate, from time to time, a new constructed element that connecting directly with the previous one, it's ideally creating a work in progress model continuously new in its constant expansion's process. A strong intuition will suggest, then, that a piece inside the nature should grow with the same rhythm of the trees and the other plants that are surrounding it.

We are assuming in this way that the new man, when he can choose, he wants to live more in contact with nature: combining his intuitions with spaces marked by modern trends. However, where is not a decision determined by a choice it comes the concept of necessity.¹⁷

We need to reconfigure our eye, our vision towards the things with the tools that the technology can give to us. The cyborg self of the ocean of data and the reconfigured city will structure new spaces that will be destined to a new use, prolonged along space and time.

These starting points with a metamorphosis of contemporary physics addressed to the production of an artificial super partes intelligence, combine knowledge with the contemporary necessity to calculate and unify what man can not really emulate: the nature.

It is this concept that does need to be revisited with the strategy of a new super human intuition, going beyond the already known super-human calculation: that residing in the high resolution of the computational field, it seeks its way to resume the complex possibilities inherent in nature. Assuming this, the necessary conjunction between art, architecture and philosophy should therefore be revisited in conjunction with the technological development: trusting the fact that the ocean of data at our disposal will finally allow us to find the right path. Complex information is distributed into the systems, and this one combined with a superhuman intuition would allow us to give smarter solutions than the most we could possibly produce.

Already at the beginning of the new millennium, in 2003, with the exhibition of the Non- Standard Architectures¹⁸ at the Centre Pompidou in Paris, this concept has been

¹⁶ <https://scriptedbypurpose.wordpress.com/participants/biothing/>. Last access 4/11/2018.

¹⁷ <https://www.technologyreview.com/s/601928/smart-city-living-transforms-the-urban-landscape/> Last Access 06/11/2018.

¹⁸ <https://www.centrepompidou.fr/cpv/resource/cpBeKA/rRREoKn>. Last Access 17/11/2018.

resumed: diving deeply into the conception of modern architectures and spaces. And it's about spaces that, once again, the nature comes to help us with its example.

In Africa, when a storm arrives, millions of insects begin to fly around with an intuitive way of finding the right path: by the conjunction of «bug» and «tornado», the forms generated have been defined as «bugnado». Due to the form that emulate the storm generated by a sequence of algorithms, we therefore see how important it is not only to explore the mathematical path, but to dive ourselves deeply within the field of design: and the shapes naturally generated by certain movements, can become the matrix of a new design concept within the design field. The work done in this sense by Capability Brown, becomes a way to go in the direction of strengthening the generative flows of space.¹⁹

8. THE AREA

The flows generated by the movements of many people (river of people) that pass through a given area every day determine constraints: and the comparison with the river determines a profound understanding of the possibilities of the form. This concept helped us to identify the perfect area to experiment our ideas. It's in this area since 2009 that there has been developed as an interactive work between the municipality and the people: to express the idea that the area can valorise moments of joining of people and growing of culture.

This area is related to the processes of transnational migration, with a strong presence of a big Chinese community. And it's in this area, where it has been made already a lot of effort from part of the municipality to give value to the ancient limit of the city, that we identify the perfect place to study the process of its use during the 24 hours.

The actual park is a great location that is important for the area and for the whole of Barcelona. Easy to reach by private and public transport, the interaction between this border of Barcelona and the area of Sant Andria del Besos is highlighted by economic relations, and by the transformation of a territory which previously based its activity on production. The night time, following the hypothesis, should increase the quality of life of the area.

We must therefore not only understand the energy of the place, but sometimes generate it and then strengthen it and strengthen it by giving it a shape. The internet of things helps in this sense. And not just architecture, but an extensive plan at the beginning can be conceived, starting from the conception of a prototype. A first attempt has been reached with the use of a 3D printer that use plastic to create

¹⁹ Lancelot Brown, was called "Capability", a name with which he is universally recognized, for his vision of the possibilities of the places in which he intervened. He worked by determining spaces that had as a reference model the romantic ideal of beauty, and which reduced the elements of the site to a minimum. His will was to create spaces that would suggest calm, peace, and a paradisiacal and simple return of beauty. *The Poetics of Gardens* - Charles Willard Moore, William J. Mitchell, William Turnbull MIT Press, 1993.

high resolution fabric of Architecture.²⁰ The exploration of the concept preview a project that use closed elements mixed with the opened areas. The intention is to valorize the essences determining a way to interact between observer and landscape during the 24 hours. Privileged point of view, closed space with light that define the area, the design is a model-based reasoning activity. Applications of the new technologies in the design process should impact the connectivity with the urban space.

The illumination of open spaces, therefore, can and must be, as has been said, the priority of a night identity. We are dealing with the same essences, with the same elements, visible during the day, but they will assume, as we said so far, a different character. The place, even at night, it characterizes the project.



Figure 6. Experimental pavilion in Stuttgart by Achim Menges. Example of a possible model of pavilions. (Source: <http://www.achimmenges.net/?p=5561>).

The safe use of these green areas, inside the city and on its borders, must guarantee the use in total security for the entire citizens: including the people with disability. Besides, the path and the logical connection between areas, they must be related to safe spaces where it's possible to circulate using wheelchairs. The circulation must be guaranteed for the bicycle also, including some resting point and some little parking areas as well. Everything, differentiated between the various paths, needs to guarantee the circulation in total security.

²⁰ Producing noise is incredibly demanding and the Xeno Cells developed by the Wonderlab research had as goal to reach to enter in harmony with the nature with the help of the A.I. The intention has in this case passed from being a simulation of the nature to get in tune with the nature.

Understanding that this research is an exploration in progress, we will finally say that the plan should include an environmental education, including a biodiversity strategy: this last one to establish targets and actions in support, protection, restoration and enhancement of the habitat.

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